

WHAT IS CLAIMED IS :

1. A scanning charged-particle microscope having
a charged-particle source,
a lens for focusing the charged-particle optical beam
5 emitted from said charged-particle source, and

a scanning deflector for scanning said charged-particle
optical beam in two-dimensional form on a sample,

wherein said scanning charged-particle microscope is
characterized in that a passage aperture for limiting the
10 passage of the charged-particle optical beam is located between
the charged-particle source and said scanning deflector, and
in that a member for limiting the passage of the charged-particle
optical beam is provided at least in the center of said passage
aperture.

15 2. A scanning charged-particle microscope as set forth
in Claim 1 above, wherein the scanning charged-particle
microscope is characterized in that the half-opening angle
of said aperture for said charged-particle optical beam focused
on a sample by said focusing lens has a band with respect to
20 specific values of α_a and α_b .

3. A scanning charged-particle microscope as set forth
in Claim 1 above, wherein the scanning charged-particle
microscope is characterized in that said passage aperture is
formed in a plate-like body, and in that said plate-like body
25 is formed movably with respect to said charged-particle optical
beam.

4. A scanning charged-particle microscope as set forth
in Claim 3 above, wherein the scanning charged-particle

094333-083004
FOUO 20240609

microscope is characterized in that said plate-like body is formed is provided with a circular aperture in addition to said passage aperture.

5 5. A scanning charged-particle microscope having
a charged-particle source,
a lens for focusing the charged-particle optical beam
emitted from said charged-particle source, and
a scanning deflector for scanning said charged-particle
optical beam in two-dimensional form on a sample,
10 wherein said scanning charged-particle microscope is
characterized in that it has a means by which said
charged-particle optical beam focused on said sample is
radiated so that the half-opening angle of said aperture for
the charged-particle optical beam will have a band with respect
15 to specific values of α_a and α_b .

20 6. A scanning charged-particle microscope as set forth
in Claim 5 above, wherein the scanning charged-particle
microscope is characterized in that a plate-like aperture body
in which an annular aperture is formed is provided between
said charged-particle source and said scanning deflector.

25 7. A scanning charged-particle microscope as set forth
in Claim 6 above, wherein the scanning charged-particle
microscope is characterized in that in addition to said annular
aperture, a circular aperture is provided in said plate-like
aperture body, and in that there is provided a movement feature
for positioning said annular aperture and said circular
aperture on the orbit of said charged-particle optical beam.

8. A scanning charged-particle microscope having

a charged-particle source,

a lens for focusing the charged-particle optical beam
emitted from said charged-particle source, and

5 a scanning deflector for scanning said charged-particle
optical beam in two-dimensional form on a sample,

10 wherein said scanning charged-particle microscope is
characterized in that an aperture for limiting the passage
of said charged-particle optical beam is formed in two different
places on the orbit thereof, and in that one of said two apertures
is an annular aperture and the other is a circular aperture.

15 9. A scanning charged-particle microscope as set forth
in Claim 8 above, wherein the scanning charged-particle
microscope is characterized in that said annular aperture is
formed in a plate-like body, in that said plate-like body is
also provided with a circular aperture, and in that there is
provided a movement feature for positioning the annular
aperture and the circular aperture on the orbit of said
charged-particle optical beam.

20 10. A scanning charged-particle microscope as set forth
in Claim 8 above, wherein the scanning charged-particle
microscope is characterized in that said circular aperture
is formed in a plate-like body, in that said plate-like body
is also provided with a charged-particle optical beam cutoff
portion, and in that there is provided a movement feature for
25 positioning said charged-particle optical beam cutoff portion
and said circular aperture on the orbit of said charged-particle
optical beam.

11. A scanning charged-particle microscope as set forth

5
10

15

20

25

wherein said samples image forming method is characterized in that the image of a sample that has been acquired with an annular aperture positioned on the orbit of the charged-particle optical beam and the image of a sample that has been acquired with a circular aperture positioned on the orbit of the charged-particle optical beam are combined to form a new samples image.